



**DEPARTMENT OF THE AIR FORCE**  
HEADQUARTERS AIR FORCE CIVIL ENGINEER SUPPORT AGENCY

FROM: HQ AFCESA/CES  
139 Barnes Drive, Suite 1  
Tyndall AFB, FL 32403-5319

SUBJECT: **Engineering Technical Letter (ETL) 96-4: Temporary Joint Sealing  
Details and Procedures for Pavements**

**1. Purpose.** Short-term performance (less than two years) of pavement joint and crack repairs is acceptable in appropriate circumstances. Example: Pavement is scheduled to be abandoned in two years but must be maintained due to FOD potential from spalling. This ETL provides standard procedures and details for temporarily sealing joints and cracks in rigid pavements.

**2. Application.** Guidance within this ETL is optional.

**2.1. Authority:**

- AFM 88-6 CH7, *Standard Practice for Sealing Joints and Cracks in Rigid and Flexible Pavements*
- AFP 88-71, *Design Guide for Army and Air Force Airfields, Pavements, Railroads, Storm Drainage and Earthwork*

**2.2. Effective Date:** Immediately. Remains in effect until AFM 88-6CH7 and AFP 88-71 are revised to include this information. Expires five years from date of issue.

**3. Repair Procedures.**

**3.1. Neoprene Compression Seal (NCS) Joints.**

**3.1.1. Compression Seal Removed (Figures 1a and 1b).**

- (a) Remove compression seal.
- (b) Remove all loose and poorly bonded concrete from the joint and joint walls.
- (c) Sandblast joint walls and bottom.
- (d) Air blow reservoir to remove debris and dry joint.
- (e) Install separating tape along joint bottom.
- (f) Prime joint reservoir walls if recommended by sealant manufacturer's published installation procedures.
- (g) Fill reservoir to within 9 millimeters (3/8 inch), plus or minus 3 millimeters (1/8 inch) of slab surface.

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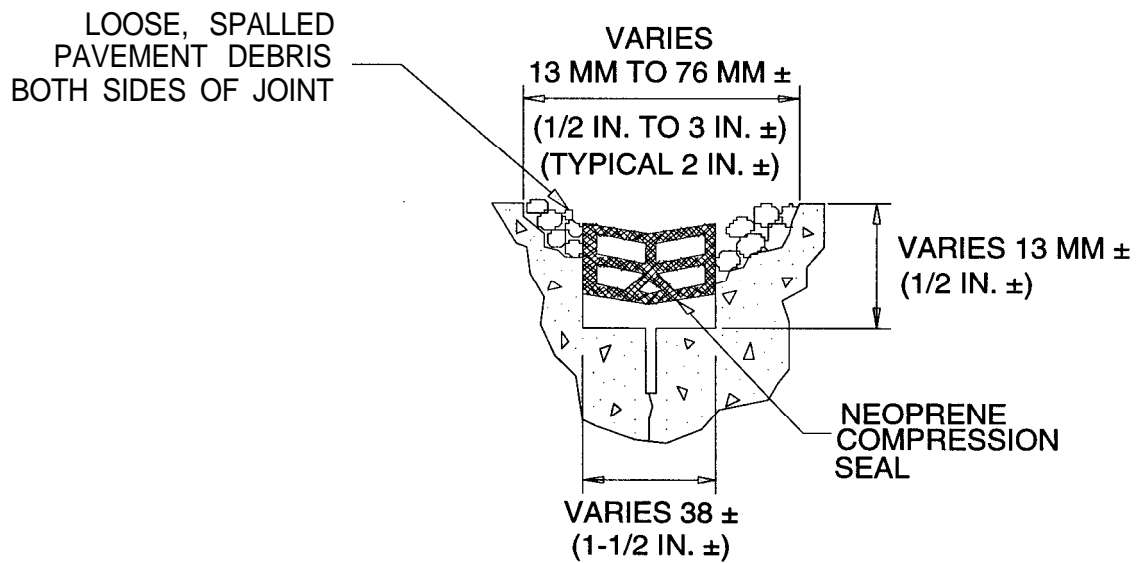


Figure 1a. Existing Spalled NCS Joint

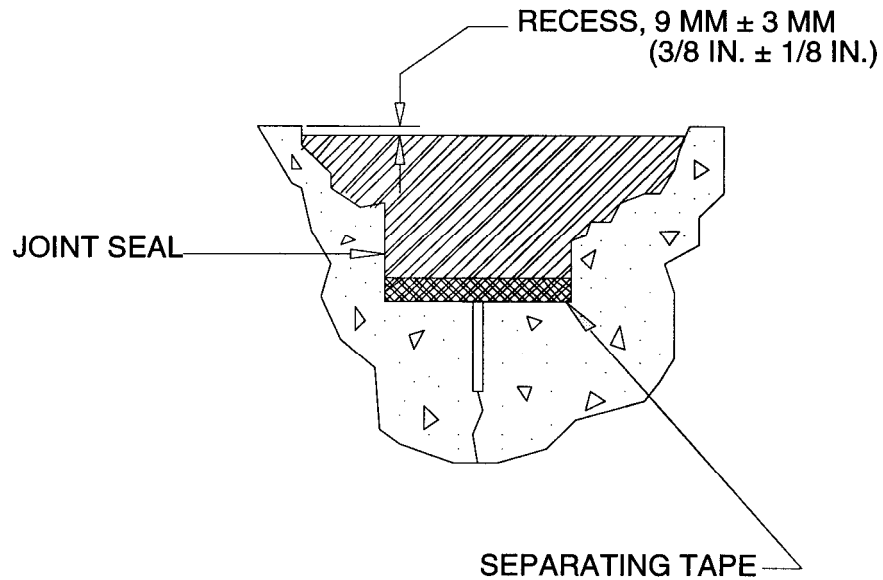


Figure 1b. Repaired NCS Joint, Compression Seal Removed

**3.1.2. Compression Seal In Place (Figures 2a and 2b).**

- (a) Remove loose or delaminated concrete by hand, chisel, or other tool as required.
- (b) Air blast to a clean condition.
- (c) Fill with sealant to top of existing compression seal.

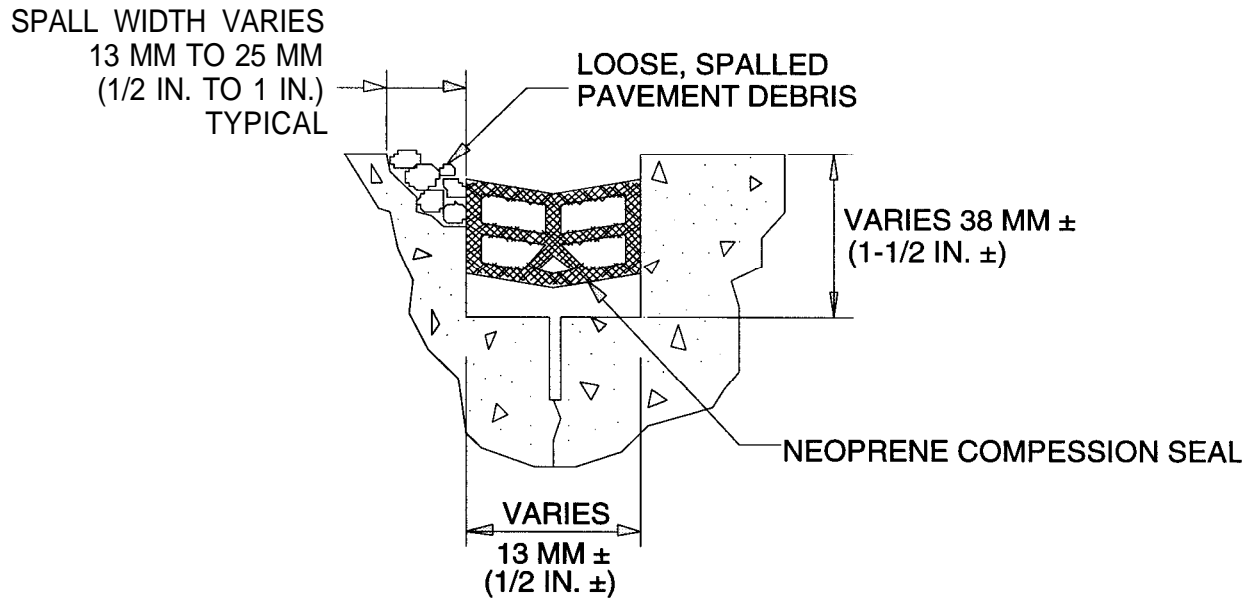


Figure 2a. Existing NCS Random Spall Area

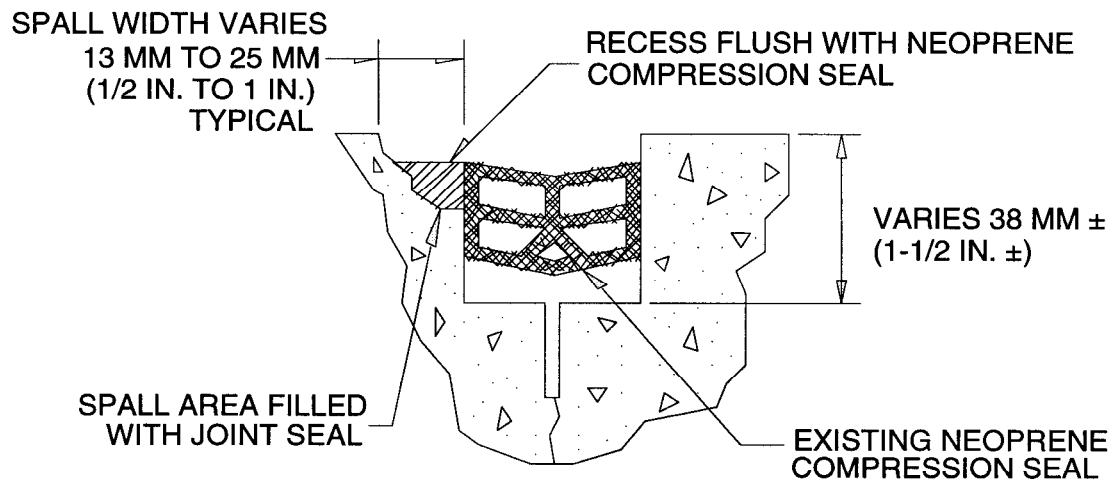


Figure 2b. Repaired NCS Random Spall Area, Compression Seal In Place

**3.1.3. Section of Compression Seal Removed (Figure 3).**

- (a) Cut and remove neoprene compression seal.
- (b) Remove all loose, poorly bonded, and delaminated concrete from joint and joint walls.
- (c) Sandblast joint walls and bottom.
- (d) Air blow reservoir to remove debris and dry joint.
- (e) Install separating tape along joint bottom.
- (f) Prime joint reservoir walls if recommended by sealant manufacturer's published installation procedures.
- (g) Fill reservoir to within 9 millimeters ( $3/8$  inch), plus or minus 3 millimeters ( $1/8$  inch) of slab surface.

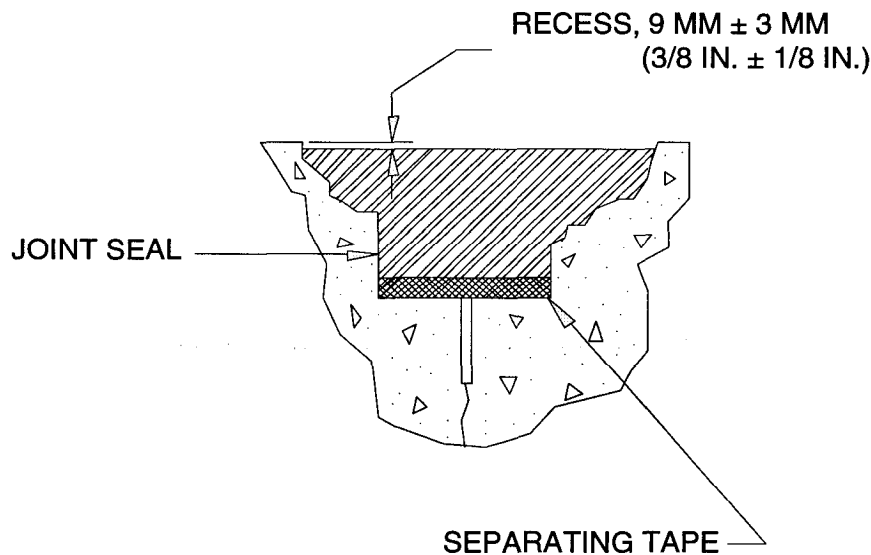


Figure 3. Repaired NCS Random Spall Area, Section of NCS Removed

**3.2. Random Cracks (Figure 4a and 4b).**

- (a) Rout crack with vertical spindle router or crack chasing saw. Width of cut: 13 millimeters ( $1/2$  inch), minimum; depth of cut: 17 millimeters ( $5/8$  inch), minimum. Vertical spindle router must be used where crack chasing saw kerf (13 millimeters [ $1/2$ -inch width]) will not remain over cracks.
- (b) Flush crack seal reservoir with high-pressure water only if wet sawing of crack reservoir is used.
- (c) Remove all loose, poorly bonded and delaminated concrete debris from crack seal reservoir (walls and bottom) by chipping with hammer or chisel.
- (d) Sandblast both walls and bottom of crack seal reservoir.
- (e) Air blow reservoir to remove debris and dry joint.
- (f) Install separating tape in bottom of crack seal reservoir.
- (g) Prime joint reservoir walls is recommended by sealant manufacturer's published installation procedures.
- (h) Fill reservoir to within 3 millimeters ( $1/8$  inch) to 6 millimeters ( $1/4$  inch) of slab surface.

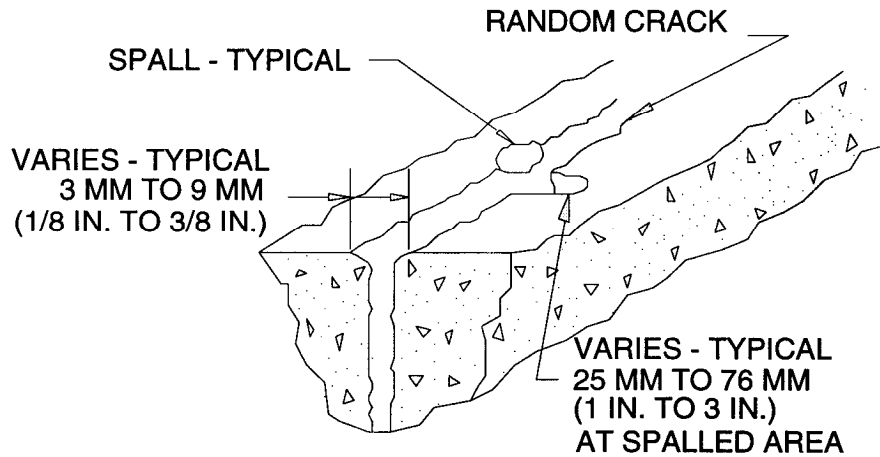


Figure 4a. Existing Random Crack

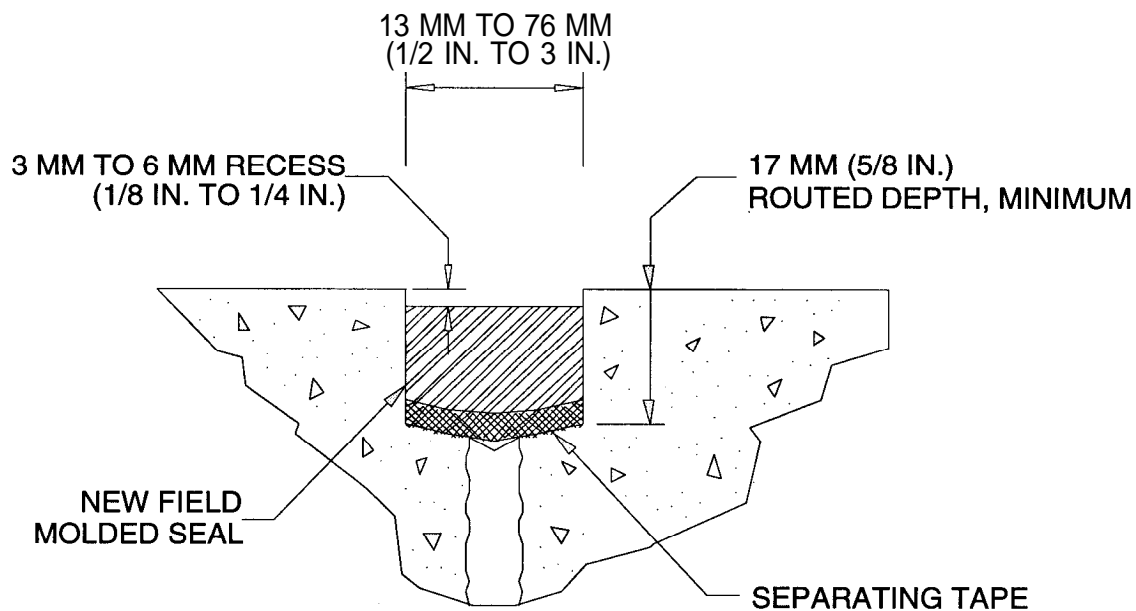


Figure 4b. Repaired Random Crack

### 3.3. Field Molded Joints (Figures 5a, 5b, and 5c).

- (a) Remove existing seal by saw cutting with gang of saw blades. Width of cut: one saw blade width greater than existing joint width (excluding spalls); depth of cut: 17 millimeters (5/8 inch), minimum. For joints with backer rod, remove to bottom of backer rod. Existing joint seal or expansion board below sawcut may remain in bottom of joint. Where spalling has widened the joint reservoir, sawcut width need not be expanded beyond width required for unspalled condition.
- (b) Flush joint seal reservoir with high-pressure water only if wet sawing was used.
- (c) Remove all loose, poorly bonded, and delaminated concrete debris from joint seal reservoir (walls and bottom) by chipping with a hammer or chisel.
- (d) Sandblast both walls and bottom of joint seal reservoir.

- (e) Air blow reservoir to remove debris and dry joint.
- (f) Install separating tape or backer rod in bottom of joint seal reservoir. See details for proposed repair of joints.
- (g) Prime joint reservoir walls if recommended by sealant manufacturer's published installation procedures.
- (h) Fill reservoir to within 3 millimeters (1/8 inch) to 6 millimeters (1/4 inch) of slab surface.

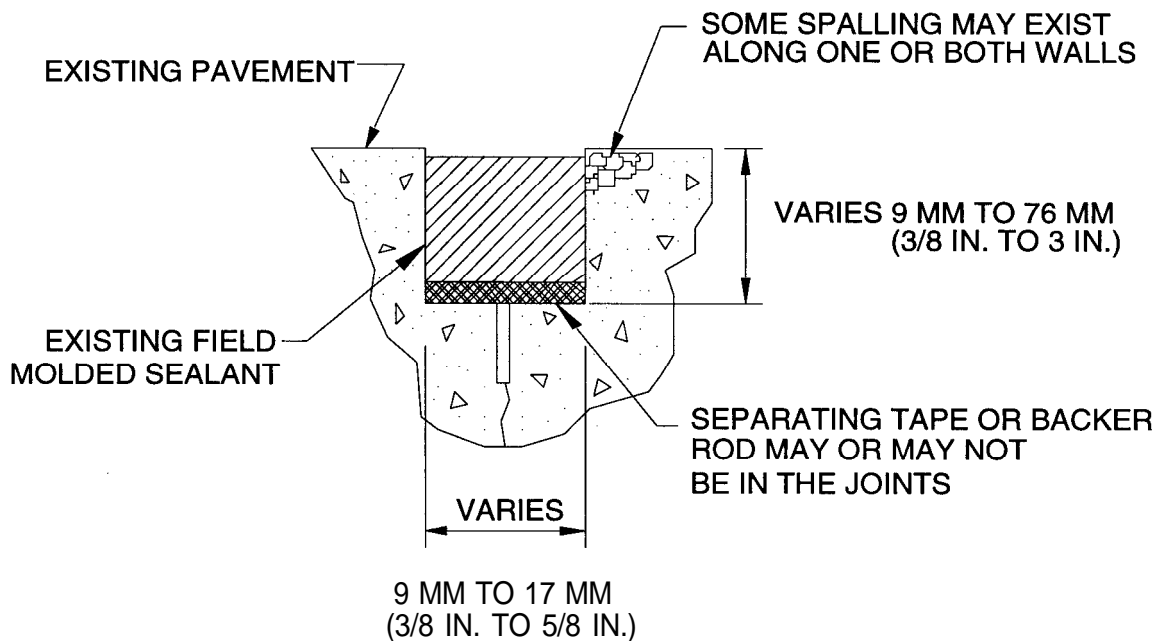


Figure 5a. Existing Spalled Field Molded Joint

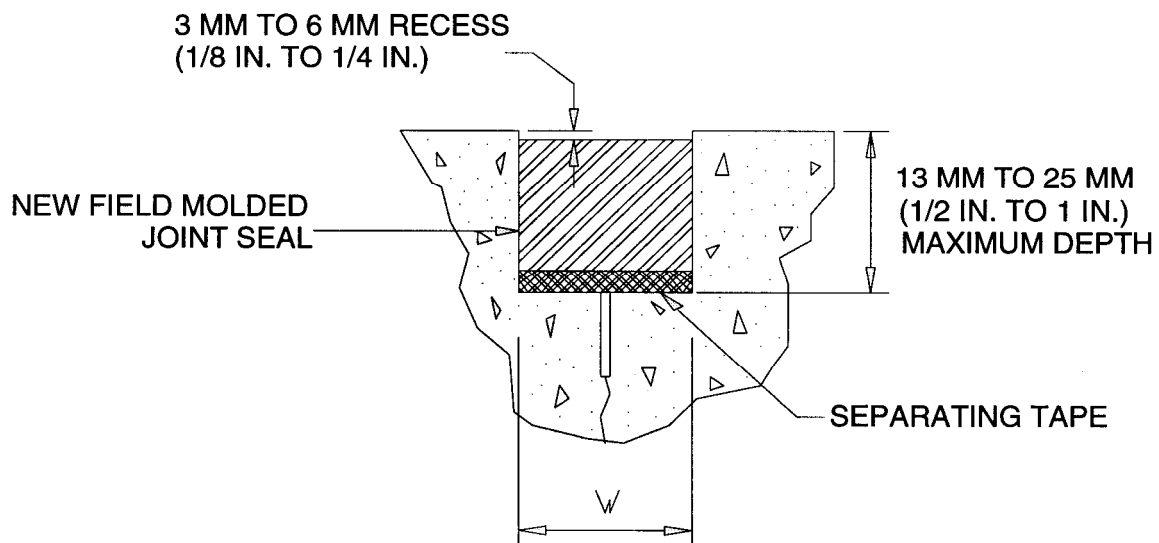


Figure 5b. Resealed Field Molded Joint With Separating Tape

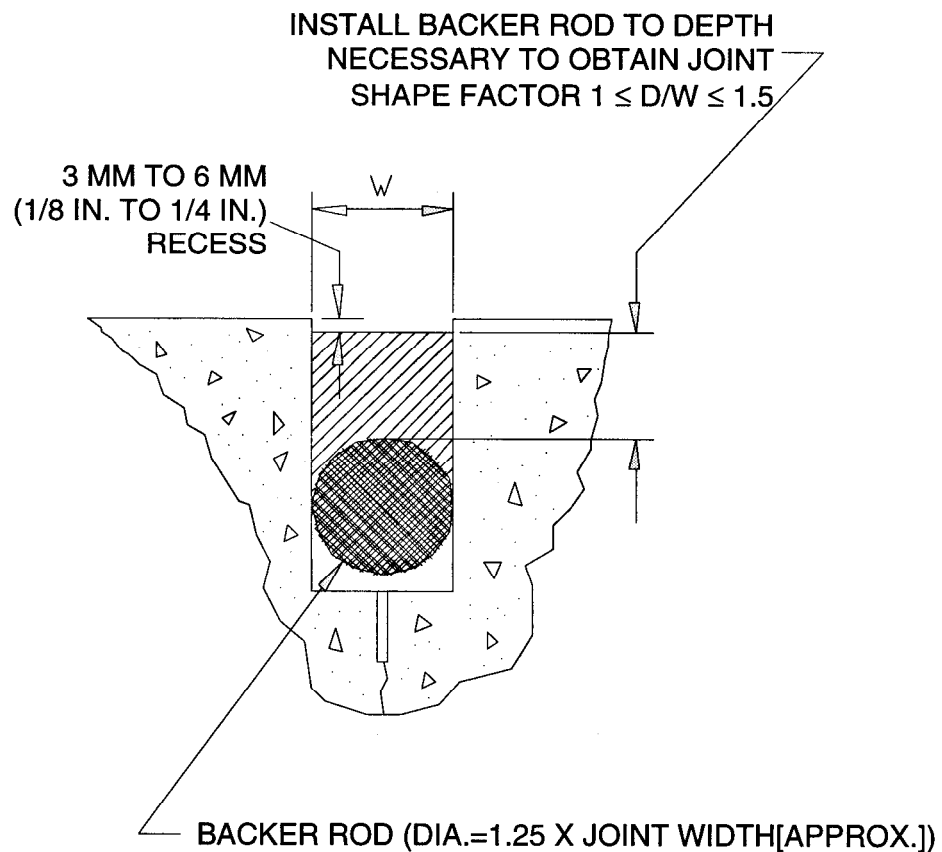


Figure 5c. Resealed Field Molded Joint With Backer Road

### 3.4. Partial Depth Joints (Figures 6a and 6b).

- (a) Make vertical sawcut 51 millimeters (2 inches) deep, approximately 76 millimeters (3 inches) from distressed area. Overlap corner sawcuts by 25 millimeters (1 inch), minimum.
- (b) Remove all concrete and loose material within the sawed area to sound concrete (76 millimeters [3 inches] minimum depth).
- (c) Use a separating medium to maintain and protect joints.
- (d) Use bonding agent to insure good contact between the pavement, and patch as recommended by manufacturer's instructions.
- (e) Apply patch.
- (f) Apply curing compound to the patch surface if recommended by manufacturer's instructions.
- (g) After patch has cured, clean joint and apply joint sealant.

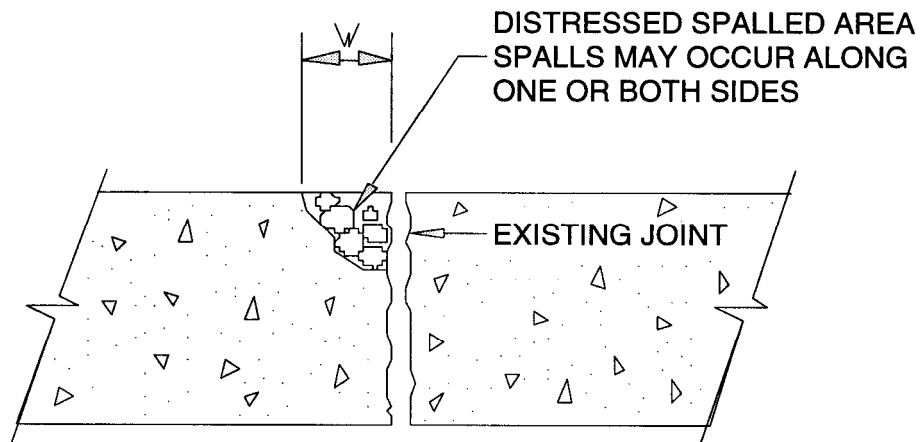


Figure 6a. Existing Partial Depth Spalled Joint

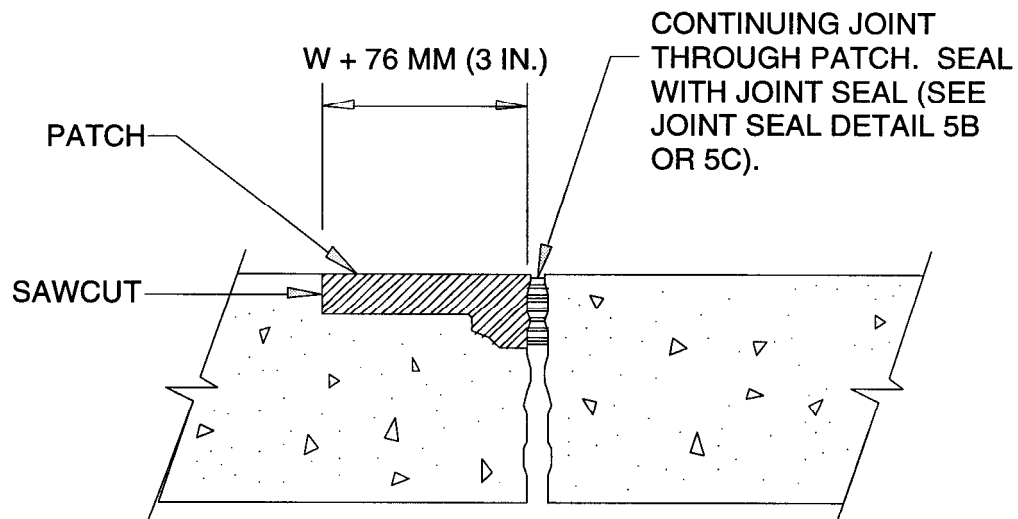


Figure 6b. Repaired Partial Depth Joint With Backer Rod

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